SASKATCHEWAN ENVIRONMENT COMMENTS

on the

PROPOSED GOLD MINE AND MILL

at

STAR LAKE, SASKATCHEWAN

as proposed by

SASKATCHEWAN MINING DEVELOPMENT CORPORATION

and

STARREX MINING CORPORATION LTD.

Saskatchewan Environment
September, 1985

INTRODUCTION

The major goal of an Environmental Impact Assessment (EIA) is to provide the information necessary for government decision-makers to determine whether, from an environmental perspective, a proposed development should be allowed to proceed and, if so, under what conditions. As part of the environmental assessment process the project proponent is required to prepare an Environmental Impact Statement (EIS). The EIS documents the proponent's conclusions about how the project is likely to affect the environment (biophysical and socio-economic), and describes the measures the proponent will take to mitigate any negative environmental impacts and to enhance positive impacts. The EIS is made available for public review and comment; input received from the public, together with information generated during a technical review of project data, is provided to the Minister of Environment for his consideration.

To assist both the public and government decision-makers in reviewing the EIS and evaluating the environmental acceptability of the proposed development, Saskatchewan Environment prepares a written commentary on the project. These comments represent Saskatchewan Environment's evaluation of the environmental implications of the project, the proponent's conclusions regarding the environmental impacts predicted, the significance of these impacts, and the effectiveness of proposed mitigative measures. In preparing the comments Saskatchewan Environment focuses on those areas where there may be significant residual impacts after proposed mitigative measures are implemented. The intent is to identify for the public the environmental trade-offs associated with the project; i.e., the environmental risks which must be accepted to realize the benefits associated with the project.

WASTE MANAGEMENT

The tailings area site selection process omitted the key criterion of hydrogeological acceptability. Since detailed groundwater studies were conducted at only one location Saskatchewan Environment is not in a position at this time to determine whether the most acceptable site has been selected.

The EIS states that because of the much greater effective porosity of overburden strata (peat and till) in the proposed tailings area, these strata store a large quantity of water which must be displaced before contaminants can reach the bedrock surface. It has been suggested by the proponents that although the proposed tailings area is situated over a higher-permeability bedrock fracture zone, contaminants will probably not reach adjacent lakes (Star and David) during the life of the operation. The seepage rates presented in the EIS are considered by the proponents to be conservative, and they suggest that any long-term contribution of contaminants by the seepage pathway will not have a detectable effect on surface water quality.

If this analysis is incorrect, seepage could reach adjacent lakes sooner than anticipated and in greater volumes than expected. Should this occur, aquatic resources in Star and David Lakes would be affected. The level of impact would depend on the quality and quantity of seepage; effects might be of a relatively short-term nature as cyanide (the contaminant of primary concern) degrades with time. These potential impacts are of greatest significance with regard to the inlet to Star Lake where northern pike spawning has been documented. Recently acquired data suggest that

game fish populations in David Lake are small, and spawning sites have not been identified in areas most likely to be affected by any seepage.

Should the project be approved, an elaborate monitoring system would be necessary to assess the effectiveness of the overburden strata as a flow retardant system. A finite life would have to be established for the site and earlier decommissioning might be necessary if early arrival of contaminants at the bedrock surface was anticipated. The installation of a cyanide destruction unit or other wastewater treatment system might also be required.

Saskatchewan Environment is concerned that insufficient space is available between the proposed tailings site and the adjacent lakes within which contingency or remedial measures could be implemented should the need arise. Control structures proposed for the inlet to Star Lake and the outlet of David Lake would provide additional environmental protection although, in effect, these lakes would become part of the treatment system. It is the department's position that remedial measures involving the alteration of or treatment within natural waterbodies should be viewed as options of last resort.

If the tailings area did behave in the manner predicted in the EIS, timely decommissioning of the area would be essential. Some contaminated seepage would continue to escape from the site to Star Lake, although it is suggested by the proponents that surface water quality would not be affected because the extended flow time would allow for biodegradation and geochemical attenuation of contaminants in the groundwater system.

Monitoring would be required to confirm that long-term adverse impacts are not realized.

BIOPHYSICAL CONSIDERATIONS

In general, the proponents have provided an adequate description of the project area and the natural resources occurring there. However, additional data should have been provided with respect to the fisheries resources of lakes and streams within the influence of the proposed development.

Relatively little information has been presented in the EIS with regard to species composition and relative abundance of fish in lakes in the project area. However, additional studies (not reported in the EIS) have since been conducted by the proponents to better describe existing conditions and to support some of the statements made in the EIS.

The proponents have undertaken surveys in David Lake and portions of Star Lake to identify the locations of northern pike spawning habitats and to assess the degree of utilization of those areas during the spring spawning period. Fall spawners are also known to occur in Star Lake, but no effort has been made to determine whether important species such as lake trout or lake whitefish spawn in areas within the influence of the proposed development. Additional surveys will be required to assess possible effects of the development on fall-spawning fish species. Streams crossed by the access road will also be investigated by the proponents.

SOCIO-ECONOMIC CONSIDERATIONS

Saskatchewan Environment is satisfied that the proponents have adequately identified and evaluated the socio-economic impacts likely to be associated with the proposed gold mine and mill. The proponents' intentions to develop "Corporate policies" designed to enhance regional business and employment opportunities are commendable.